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for breast cancer, 15.3–16.6% for colorectal cancer, 4.8–5.3% for lung cancer, and 5.8–6.0% for oesophageal cancer.<sup>5</sup>

Government restrictions are disrupting traditional means of support between friends and family members. Physical distancing and contact reduction are causing severe stress to many people and might increase the risk of suicide.<sup>6</sup> In a meta-analysis of the prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic,<sup>7</sup> the prevalence of depression in the months of the pandemic up to May, 2020, was 33.7% (95% CI 27.5–40.6). Between April 22 and May 11, 2020, 795 (78.9%) of 1008 people aged 18–35 years in the USA reported symptoms of depression.<sup>8</sup> Further and stronger restrictions on physical and social contact could lead to a further increase in the prevalence of depression.

We call on all scientists, public health officials, journalists, and politicians to weigh and consider the collateral damage from government COVID-19 control measures and their negative effect on many short-term and long-term health outcomes. While trying to control COVID-19, all aspects of physical and mental health need to be jointly considered. Other life-threatening diseases are being neglected, and patients with these diseases should receive the same timely and appropriate medical treatment as patients with COVID-19.

GK has received honoraria for consultation and presentation from Dr Schumacher. MK declares no competing interests.

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## WHO international non-proprietary names: the need to distinguish COVID-19 vaccines

The WHO International Nonproprietary Names Programme would like to highlight that international non-proprietary names (INNs), assigned to well defined pharmaceutical substances, including those used in vaccines, ensure that each substance is recognised globally by a unique and distinct name. Traditional vaccines that are based on live-attenuated or inactivated pathogens are assigned short, descriptive names by the WHO Expert Committee on Biological Standardization. However, new concepts and technologies in vaccine design, such as vaccines based on DNA, RNA, recombinant protein, recombinant virus, and peptides, encompass active ingredients that are well defined and fall within

the scope of the INN nomenclature system.<sup>1</sup>

As of January, 2021, several mRNA-based vaccines and one plasmid-based DNA vaccine have been assigned INNs, including the anti-rabies mRNA nadorameran,<sup>2,3</sup> the anti-severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) mRNAs zorecimeran<sup>4</sup> and tozinameran,<sup>4</sup> and the anti-SARS-CoV-2 DNA plasmid reluscovtogene ralaplasimid.<sup>4</sup>

Currently, there are no clear recommendations or a consensus in place regarding the global use of INNs assigned to newly developed SARS-CoV-2 vaccines. National or international legislation usually requires INNs for therapeutic medicinal substances; however, whether vaccines should be included in such requirements is unclear. In the context of the COVID-19 pandemic, this ambiguity has led to a situation in which some vaccine developers have applied for an INN, but others have not. Consequently, INNs for SARS-CoV-2 vaccines are not currently being included in vaccine labels and in most cases are also not listed on the respective regulatory websites.

This lack of information could pose substantial safety issues for individuals who receive a SARS-CoV-2 vaccine during this pandemic, in addition to complicating pharmacovigilance efforts for health authorities. Some of the SARS-CoV-2 vaccine candidates require two injections several weeks apart for maximum protection, which presents a considerable risk if the identity of a vaccine is not globally ensured. Several competing SARS-CoV-2 vaccines are already being distributed and clear identification of each active substance might not always be confirmed. Future scenarios include the use of multiple active ingredients in different formulations and INNs would be the ideal tool to make this approach transparent. The assignment of a unique and distinct INN to the active substances in each



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vaccine would contribute to safe prescribing, transnational distribution, enhanced pharmacovigilance, and, ultimately, the safety of vaccine recipients, as it does for therapeutic medicinal substances.

For the safety of vaccine recipients and the global recognition of vaccine ingredients, the WHO International Nonproprietary Names Programme encourages vaccine developers to submit INN requests for well defined vaccine ingredients and urges regulatory authorities to facilitate INN implementation.

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trialled in breastfeeding women.<sup>1</sup> Pfizer's current recommendation states that breastfeeding women should "ask your doctor or pharmacist for advice before you receive this vaccine".<sup>2</sup>

We fear that, like Public Health England's initial recommendation not to vaccinate lactating women,<sup>3</sup> many clinicians will recommend against taking the vaccine when breastfeeding, as is the default in the absence of data, as though breastfeeding is a neutral health decision. Those individuals immediately impacted by the advice, of course, are breastfeeding women working as front-line health-care providers and caregivers, who might be required to choose between their own health, their infant's health, and potentially, their job because not being vaccinated might be disadvantageous in the workplace.

Although the UK has reversed its stand and now advises offering the vaccine to breastfeeding women,<sup>3</sup> concerns remain because the vaccine has not been tested in lactating women, not because of empirical evidence or biological plausibility for harm.

However, we want to highlight that human milk is not a vector for severe acute respiratory syndrome coronavirus 2.<sup>4</sup> Moreover, the milk contains antibodies that could potentially protect the breastfed baby from COVID-19.<sup>5</sup> We need research to determine whether coronavirus vaccines in general, and mRNA vaccines in particular, enter the milk and transfer to the infant. Even if they do, there seems no plausible reason to recommend against vaccination for breastfeeding women. Antibodies generated in response to the vaccine should protect the breastfeeding women and the breastfed infants. Perhaps with this protection in mind, the American College of Obstetricians and Gynecologists stated upfront that "COVID-19 vaccines be offered to lactating individuals similar to

non-lactating individuals when they meet criteria for receipt of the vaccine".

To improve maternal-infant health and maintain public confidence in vaccines in handling this pandemic and preparing for the next, vaccine manufacturers and regulators must work closely with lactation scientists, infectious disease specialists, and public health experts to assess vaccine safety in breastfeeding women at early stages of product development. It is encouraging that many nations, including England, are now adopting a more positive tone around vaccine recommendations for breastfeeding women, but in many cases the finer points of the recommendation will still lie with individual providers or institutions.

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For more on the advice from the American College of Obstetricians and Gynecologists see <https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/12/vaccinating-pregnant-and-lactating-patients-against-covid-19>



## Breastfeed or be vaccinated—an unreasonable default recommendation

Breastfeeding promotes the good health of mothers and infants and is a crucial international public health issue. None of the COVID-19 vaccines currently in phase 3 trials have been

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